

WHAT IS CLAIMED IS:

1. A method performed by a data processing system having a memory, comprising the steps of:

5 simulating an execution of an assignment statement of a hardware description language design specification in order to determine a logical value for a target signal of the assignment statement based upon a set of logical values for a set of input signals to the assignment statement;

10 identifying a subset of the input signals having an observably controllable effect on the logical value of the target signal based upon the logical values of the input signals and a functional interrelation of the input signals; and

15 determining a target tag value for the target signal comprising an identifier of the assignment statement and a history comprised of a propagation of a tag value of each input signal that is a member of the subset of input signals.

2. The method of claim 1, wherein:

20 the step of identifying further comprises identifying a second subset of a set of input signals to a conditional statement of the hardware description language design specification having an observably controllable effect upon whether the assignment statement is simulated, membership in the second subset being based upon a logical value for each of an input signal to the conditional statement and a functional interrelation of the input signals to the conditional statement; and

25 the step of determining further comprises determining the history to be additionally comprised of a propagation of a tag value of each signal of the second subset.

3. The method of claim 1, wherein:

30 the step of identifying further comprises identifying a second subset of a set of input signals to a conditional expression of a conditional statement of the

hardware description language design specification having an observably
controllable effect upon whether the conditional expression is satisfied; and

the step of determining further comprises determining the history to be
additionally comprised of a propagation of a tag value of each signal of the
5 second subset.

4. The method of claim 1, wherein a propagation of a tag value to the history
is comprised of creating a copy of the tag value.

10 5. The method of claim 2, wherein a propagation of a tag value to the history
is comprised of creating a copy of the tag value.

6. The method of claim 3, wherein a propagation of a tag value to the history
is comprised of creating a copy of the tag value.

15 7. The method of claim 1, wherein:
the method further comprises the step of propagating the target tag value
from the target signal, within a module instantiation comprising the assignment
statement, to a higher-level signal of the hardware description language design
20 specification.

8. The method of claim 7, wherein the step of propagating is performed in
response to determining the logical value for the target signal.

25 9. The method of claim 7, wherein the target signal is defined as an output
signal of the module instantiation.

10. The method of claim 7, wherein the propagation is performed by creating
a copy of the target tag value.

30

00660026-091200

5

10

15

20

25

30

BRMFS1 215243v3

19. The method of claim 1, wherein the target tag value is further comprised of a field for indicating a subsequent assignment statement that utilizes the target tag value.

5

20. A data processing system having a memory, comprising the following:
a sub-system for simulating an execution of an assignment statement of a hardware description language design specification in order to determine a logical value for a target signal of the assignment statement based upon a set of logical values for a set of input signals to the assignment statement;
a sub-system for identifying a subset of the input signals having an observably controllable effect on the logical value of the target signal based upon the logical values of the input signals and a functional interrelation of the input signals; and
a sub-system for determining a target tag value for the target signal comprising an identifier of the assignment statement and a history comprised of a propagation of a tag value of each input signal that is a member of the subset of input signals.

15
20

21. A computer program product comprising a computer usable medium having computer readable code embodied therein, the computer program product comprising:

computer readable program code devices configured to cause a computer to effect simulating an execution of an assignment statement of a hardware description language design specification in order to determine a logical value for a target signal of the assignment statement based upon a set of logical values for a set of input signals to the assignment statement;

computer readable program code devices configured to cause a computer to effect identifying a subset of the input signals having an observably

controllable effect on the logical value of the target signal based upon the logical values of the input signals and a functional interrelation of the input signals; and

computer readable program code devices configured to cause a computer to effect determining a target tag value for the target signal comprising an
5 identifier of the assignment statement and a history comprised of a propagation of a tag value of each input signal that is a member of the subset of input signals.

002160" 92009960